

REMARKS

Claims 14-17, 19, 21-24, and 26-31 are pending in the application. Claim 14 has been amended and new claims 30 and 31 have been introduced. No new matter has been added by virtue of the amendments made to the claims. Support for new claims 30 and 31 can be found, for example, at page 31, lines 10-17. Support for the amendments to claim 14 can be found in claim 18 and throughout the specification as filed.

The present invention provides methods of adding a heterocyclic compound or an aldehyde to an active hydrogen containing compound which is catalyzed by a polymer gel having a swell ratio of not less than 2 and comprising a cyclic amine structure or a cyclic quaternary ammonium salt structure in the main chain of the polymer. More particularly, the polymer gel comprises a main chain comprising one or more cyclic amine or cyclic quaternary ammonium groups.

Claims 14-19, 21-24 and 26-29 were rejected under 35 U.S.C. §103(a) as being allegedly unpatenable over Wheeler, Clayton, Rabon, or Pike, each in view of Battaerd '481.

Claims 14-16, 21-24, and 26-27 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Wheeler.

None of the documents relied upon by the office action, i.e., Wheeler, Clayton, Rabon, or Pike, teach or suggest a polymer gel catalyst having a cyclic amine or quaternary ammonium functional group in the main chain of the polymer. That is, each of the cited documents teach or suggest a polystyrene polymer having acyclic amine or quaternary ammonium functional groups pendant from the polymer main chain, e.g., each of the cited documents recite cross-linked polystyrene ion-exchange resins having amine or ammonium groups attached to a phenyl side chain of a styrene residue. Moreover, none of the cited documents teach or suggest the methods claimed by the present invention.

As the reference is understood, Wheeler discloses, as hydroxyalkylesterification catalysts, ion exchange resins which include crosslinked polystyrene resins having amine residues attached to the side chain phenyl rings of styrene residues and a resin which is the reaction product of formaldehyde and a heterocyclic N-substituted guanidine. Although the disclosure fails to define the structure of the proposed catalyst formed by the reaction of formaldehyde and a heterocyclic N-substituted guanidine, the structure presumably comprises cyclic **guanidine** residues separated by methylene groups. Thus the resins recited by Wheeler do not contain cyclic amine or cyclic quaternary ammonium salts in the main chain thereof.

Moreover, Wheeler neither discloses nor suggests a resin having a cyclic amine structure or a cyclic quaternary ammonium salt structure inside its resin supporting structure would be suitable for use as a hydroxyethylesterification catalyst in an addition reaction of a heterocyclic compound or an aldehyde with an active-hydrogen-containing compound. Moreover, there is no mention at all that inclusion of a cyclic amine structure or a cyclic quaternary ammonium salt structure inside the resin supporting structure improves heat resistance (stability).

The office action argues that a broad range of basic anion exchange resins are recited by the cited documents such that one skilled in the art would be motivated to substitute an unrelated basic polymer for the disclosed catalysts. Applicants respectfully disagree. Each of the cited documents teach a cross-linked polystyrene ion exchange resin having pendant acyclic amine or ammonium residues on the side chains of the styrene residues. Thus, the scope of ion exchange resins suitable for use in the reactions recited by Wheeler, Clayton, Rabon, and Pike is quite narrow. None of the cited documents teach resins comprising cyclic amine residues or cyclic quaternary ammonium salt residues in the main chain or pendant from the main chain of the disclosed ion exchange resins.

Battaerd merely recites certain resins containing a cyclic amine and the use of such resins as ion exchange materials. Battaerd neither discloses nor suggests any other application for such material and fails to teach or suggest the use of the recited resins as catalysts or activators for any reaction process.

Thus, one skilled in the art would not be motivated to replace the catalysts disclosed in the primary documents with the resins recited by Battaerd, at least because, the primary documents teach a narrow range of polystyrene ion exchange resins which are suitable catalysts and the substantial structural differences between the resins recited by Battaerd and the primary documents. One skilled in the art would have not reasonable basis or expectation of success by the combination of teachings relied upon in the office action.

Applicants submit that the cited references do not teach or suggest the present invention in a manner sufficient to sustain the instant rejection. For example, see *In re Marshall*, 198 USPQ 344, 346 (CCPA 1978) ("[r]ejections under 35 U.S.C. §102 are proper only when the claimed subject matter is identically disclosed or described in the prior art.") Additionally, it is well-known that to establish a *prima facie* case of obviousness, three basic criteria must be met: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art reference(s) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143.

Thus, for at least the reasons discussed herein, claim 14 is patentable over each of the cited documents taken alone or in combination. Claims 15-17, 19, and 27-31 depend from claim 14 and are therefore also patentable over any combination of the cited documents.

Claims 14-19, 21-24 and 26-29 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being allegedly unpatentable over claim 9 of copending U.S. Patent Application No. 09/880,876 (which has now issued as U.S. Patent 6,646,083).

The double patenting rejection is not proper.

The instant application is directed to methods of synthesis of a variety of compounds prepared by contacting an active hydrogen containing compound with an aldehyde or a heterocycle in the presence of a polymer gel having cyclic amines or cyclic quaternary ammonium salts in the main chain thereof. The instant application is a divisional of U.S.S.N. 09/297,953 filed July 21, 1999 which was a §371 application of PCT/JP98/04021 filed September 7, 1998, and consequently the patent term of patents issuing from this family of applications will expire no later than September 7, 2018 (e.g., twenty (20) years from the international filing date).

In contrast, the '876 application, which was filed June 15, 2001, is directed to crosslinked polymeric gels provided by claim 1 and methods of making hydroxyalkyl(meth)acrylates using the polymeric materials of claim 1. As the '876 application is understood, it appears to provide certain new crosslinked polymers having *spiro* quaternary ammonium salt functional groups which are suitable for use as catalysts of a particular chemical reaction. The 6,646,083 patent, which issued from the '876 application, will expire on June 15, 2021.

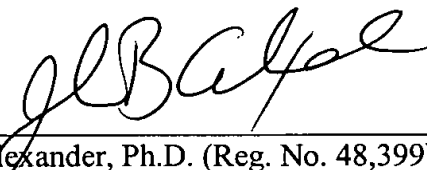
Clearly the 6,646,083 patent provides certain improved polymeric gel catalysts for use in a particular chemical transformation which are generically covered in the instant application. However, a patent comprising the claims pending in the instant application would expire before the 6,646,083 patent. Thus, Applicants would not be benefiting from an "unjustified timewise extension of the right to exclude granted by a patent" (MPEP §804 citing *In re Schneller*, 397 F.2d 350 (1968)).

Although Applicants do not believe that a terminal disclaimer is necessary, Applicants are amendable to filing a terminal disclaimer which requires the common ownership of the instant application with the 6,646,083 patent for the lifetime of any patents issuing from the present invention provided that the term of the 6,646,083 patent is not compromised.

It is believed the application is in condition for immediate allowance which action is earnestly solicited.

Respectfully submitted,

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